

What is claimed is:

- 5 1. A mold insert, comprising at least one optically critical surface, wherein
periodic structures on the optically critical surface are of a periodicity of less than
about 3 μm and an amplitude of less than about 4 nm RMS.
- 10 2. The mold insert of claim 1, wherein the insert further comprises pure steel,
brass, copper, nickel-plated substrates, chromium, cobalt-nickel, alloyed martensitic
steel, or combinations thereof.
- 15 3. The mold insert of claim 1, wherein the insert further comprises nickel-
plated copper or nickel-plated brass.
- 20 4. A mold half for use in molding a contact lens, comprising at least one
molding surface, wherein periodic structures on the molding surface are of a
periodicity of less than about 3 μm and an amplitude of less than about 4 nm RMS.
- 25 5. The mold half of claim 4, wherein the mold half further comprises
polypropylene, polystyrene, and cyclic polyolefins, polyacrylonitrile materials, or
combinations thereof.
6. A silicone hydrogel contact lens, comprising at least one surface wherein
periodic structures on the surface are of a periodicity of less than about 3 μm and an
amplitude of less than about 4 nm RMS.
- 25 7. The silicone hydrogel lens of claim 6, wherein the at least one surface further
comprises a hydrophilic coating.

8. The silicone hydrogel lens of claim 7, wherein the hydrophilic coating is selected from the group consisting of poly(acrylic acid), poly(methacrylic acid), poly(dimethyl)acrylamide, poly(acrylamide), or poly(hydroxyethylmethacrylate).
- 5 9. The silicone hydrogel lens of claim 7, wherein the hydrophilic coating is poly(acrylic acid).
- 10 10. The silicone hydrogel lens of claim 7, wherein the hydrophilic coating is poly(acrylamide).
11. The silicone hydrogel lens of claim 7, wherein the hydrophilic coating is poly(hydroxyethylmethacrylate).
- 15 12. The silicone hydrogel lens of claim 6, wherein the silicone hydrogel comprises a Group Transfer Product of a reaction mixture comprising 2-hydroxyethyl methacrylate, methyl methacrylate, methacryloxypropyltris(trimethylsiloxy)silane, and mono-methacryloxypropyl terminated mono-butyl terminated polydimethylsiloxane and a polymerizable mixture comprising a Si7-9 monomethacryloxy terminated polydimethyl siloxane; a 20 methacryloxypropyl tris(trimethyl siloxy) silane; N,N-dimethyl acrylamide; 2-hydroxy ethyl methacrylate; and tetraethyleneglycol dimethacrylate.
- 25 13. The silicone hydrogel lens of claim 7, wherein the silicone hydrogel comprises a Group Transfer Product of a reaction mixture comprising 2-hydroxyethyl methacrylate, methyl methacrylate, methacryloxypropyltris(trimethylsiloxy)silane, and mono-methacryloxypropyl terminated mono-butyl terminated polydimethylsiloxane and a polymerizable mixture comprising a Si7-9 monomethacryloxy terminated polydimethyl siloxane; a 30 methacryloxypropyl tris(trimethyl siloxy) silane; N,N-dimethyl acrylamide; 2-hydroxy ethyl methacrylate; and tetraethyleneglycol dimethacrylate.

14. The silicone hydrogel lens of claim 6, wherein the silicone hydrogel comprises a fluorosiloxane hydrogel.
- 5 15. The silicone hydrogel lens of claim 7, wherein the silicone hydrogel comprises a fluorosiloxane hydrogel.
16. A method for manufacturing a silicone hydrogel contact lens, comprising the steps of:
- 10 a.) providing a mold insert comprising at least one optically critical surface, wherein periodic structures on the optically critical surface are of a periodicity of less than about 3 μm and an amplitude of less than about 4 nm RMS;

- b.) producing at least one mold half using the mold insert provided in step
a.); and
- 5 c.) molding the contact lens using the at least one mold half produced in step
b.).
17. The method of claim 16, wherein step a.) is carried out by polishing.
- 10 18. The method of claim 17, wherein step a.) is carried out by lathing.
19. A method for manufacturing a silicone hydrogel contact lens, comprising the
steps of:
- 15 a.) producing at least one mold half comprising at least one molding surface,
wherein periodic structures on the molding surface are of a periodicity of less than
about 3 μm and an amplitude of less than about 4 nm RMS; and
- 16 b.) molding the contact lens using the at least one mold half.